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ABSTRACT

Researchers at the University of Arkansas at Little Rock conducted a study of faculty attitudes about the use of technology in the college classroom using electronic focus group sessions. This paper examines the electronic focus group data collection procedure. The electronic sessions were conducted in a decision-support center on campus with 13 networked computer workstations and 1 server. The software for the focus group sessions was Group Systems 2.0 by Ventana Corporation. At each session, the facilitator explained the technology and then engaged in a guided question-and-answer process using a predetermined focus group script. In the first phase, participants answered the questions individually, and in a second phase, they "discussed" the responses with each other electronically. Researchers found that the electronic format improved the objectivity of each session, reduced the influence of a sensitive topic on participation, and enhanced the management of a discussion. The electronic format also improved the accuracy of the data by capturing every voice and comment in "real time." The primary disadvantage was the reduced ability of the researcher to guide the discussion and request elaboration of any given topic. The researchers, however, believed that this disadvantage was more a consequence of their inexperience with the technology than a problem with the electronic format. An appendix contains the focus group script. (Author/SLD)

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Utilizing Networked Computer Workstations to Conduct Electronic Focus Group Sessions

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Abstract

During the spring semester 1999, the researchers conducted a study exploring faculty attitudes about the use of technology in the college classroom. The data collection method chosen for this naturalistic study was a series of "electronic" focus group sessions with faculty employed at the University of Arkansas at Little Rock. The electronic sessions were conducted in a decision-support center located on campus equipped with 13 networked-PC compatible computer workstations, one server, and a facilitator workstation. The software used for the focus group sessions was Group Systems version 2.0 by Ventana Corporation headquartered in Tucson, Arizona. This software is specifically designed for group decision-making, problem solving, and brainstorming activities.

At the beginning of each focus group session, the facilitator explained the technology to participants along with an explanation of how to respond to questions via the computer. After a brief practice session using the technology, the facilitator engaged in a guided-question and answer process using a pre-determined focus group script via the facilitator workstation. The guided-process included two phases. In the first phase the facilitator posed a question to the group. Individually, the participants responded to each question via the computer. In the second phase, the facilitator "opened" the network to allow all participants to read all responses. Then, through networking, the participants were asked to "talk" with each other about the responses. A printed transcript from each session was analyzed utilizing a content analysis procedure.

The researchers found that the electronic format for the focus group method of inquiry did improve the objectivity of each session, reduced the influence of a sensitive topic on participation, and enhanced the management of participant discussion. Furthermore, the electronic format improved the accuracy of the data collected by capturing every voice and every comment in "real time". The primary disadvantage of the electronic method was the reduced ability of the researcher to guide the discussion and request elaboration on any given topic. The researchers, however, believed that this disadvantage was more a consequence of their inexperience with the technology instead of a problem with the electronic format.

The brainchild of the social sciences and the favored stepchild of marketing research, the focus group method of inquiry has found increasing favor in all areas of research (Ponsford & Masters, 1998). Over the past decade, higher education researchers have used focus groups for curriculum review (Hendershott & Wright, 1993), and to assess the effectiveness of student service programs (Kaase & Harshbarger, 1993). They have used the focus method of inquiry to explore campus experiences of students of color (Crim, 1998) and to conduct needs assessment for higher education programs (Spall, Barrett, Darragh, Gill, & Schwei, 1998; Tipping, 1998). In addition, researchers have employed focus groups to assess student pre- and post-attitudes concerning their experiences participating in a learning community (Thompson, 1998).

Focus groups are increasing in popularity because of the unique opportunity for the researcher to personally experience the attitudes and opinions of respondents. No other data collection provides the same level of intimate conveyance of data as the focus group (Byers & Wilcox, 1991). During a focus group session, the researcher can match nonverbal and verbal cues to develop a profile of a respondent's attitude. Because the interviewing process is a free flowing dialog between moderator and participants, the moderator can ask probing questions that may uncover some deep rooted attitudes that a simple questionnaire could not ascertain (Quible, 1998). In many cases, researchers use the focus group method as a starting point in the development of valid quantitative research projects (Ponsford & Masters, 1998; Tipping, 1998).

Just as with any qualitative research method, however, there are criticisms of the focus group method. The literature on the problems with focus groups tend to revolve around the issues of generalizability, reliability, and validity (Bers, 1989). Within the

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construct of generalizability, many quantitative researchers point to the typically small size of focus group participation and argue that such a small sample from a total population can not be representative of the population. The argument from supporters of focus group work, however, point to the phenomenological nature, "experiencing-the-experience", of focus groups (Byers & Wilcox, 1991). Supporters argue that the intent of the focus group method is not to quantify reality, but instead to understand perception, attitudes, and opinions. According to Merriam (1998), the argument of generalizability must be framed within the purpose of the qualitative collection of data. This purpose is to build a theoretical framework based on the attitudes of a purposively selected sample about a specific research question. Therefore, the data collected must be generalizable, only, to the theoretical framework, and not to the total population (Merriam, 1998).

The reliability and validity of the data collected is, also, an issue for focus group researchers. Reliability is the assurance that a particular data collection method will have consistent results when repeatedly administered. Once again, the purpose of the focus group method is not to quantify results to test reality, but to generate understanding of attitudes and opinions. In other words, the purpose of a focus group is not to ask "how many" but instead to ask "why"? In this situation, reliability is not a critical factor (Byer & Wilcox, 1991).

Validity is the appropriate match between the data collected and the inferences made by the researcher based on that data. If this statement is true, and it is true that in qualitative research the inferences are made to the theoretical framework and not to the general population, then it is reasonable to conclude that validity of focus group findings must be observed in the congruence between what was said during the session and the

design of the resulting theory (Merriam, 1998). Therefore, a well-conducted focus group can ensure validity to the theory with clearly defined research objectives and questions, purposive recruiting of appropriate participants, competent moderating, and exacting analysis of data (Bers, 1989). According to Templeton, (1987), "all people draw their responses from the same collection of possibilities. I need not ask, then, whether a given reaction that has appeared in one or two groups will or will not appear in the population at large. It has already appeared in several individuals, and if it is possible for them it is possible for everyone" (p. 111). To summarize the arguments in favor of focus group methodology, Krueger (1988) stated,

> It is important to keep in mind that the intent of focus groups is not to infer but to understand, not to generalize but to determine the range, and not to make statements about the population but to provide insights about how people perceive a situation (p. 96).

Specific Challenges of the Traditional Focus Group Method

For the purpose of this paper, the "traditional" focus group method is defined as a researcher bringing a group of eight to ten participants together to verbally discuss, face-to-face, a specific research topic. In most cases, the researcher serves as the moderator for the group. Templeton (1987) has labeled this researcher/moderator role as a rapporteur. The length of the traditional focus group session is approximately 2 hours to ensure that enough time is provided to hear all the voices in the group. These sessions are either audio or video-recorded, or both, to improve the likelihood that the researcher accurately captures the data

Researchers who choose the traditional focus group method recognize that many challenges exist intrinsic to the nature of this data collection mode. Such challenges include: (a) objectivity, (b) handling the discussion of sensitive topics, and (c) managing the conversation with participants who bring an agenda to the focus group discussion, who perceive themselves as an expert on the topic, or who are naturally talkative. A challenge that is problematic for all qualitative researchers, and is particularly troublesome for researchers using a focus group method, is objectivity. Objectivity is always a concern when the research method puts the researcher in the role of observer and data analyst. The traditional focus group methodology is ripe for this criticism because, in many instances, the researcher and the moderator of the group are one in the same.

This concern for objectivity has two components. The first concern is related to the influence of the rapporteur's perceptions and attitudes on the direction of the focus group discussion. An important role of the rapporteur is to guide the group discussion so that the conversation stays focused on the research question of the study. Unfortunately, a delicate balance exists between guiding a focused conversation and influencing the spoken attitudes of the group. The second concern related to objectivity is the dual role of rapporteur and data analyst. The rapporteur has been a part of the data collection process; now they are a pivotal component of the data analysis process. The situation is vulnerable to the verbal data filtering through only one perception strainer.

A second challenge with the traditional focus group method revolves around the issue of how to guide a group discussion on a sensitive research topic. In many cases, the topic of a research study is so sensitive that participants in a focus group discussion feel

uncomfortable discussing the topic openly or they do not wish to share their true thoughts on the topic. However, the researcher is confident that the best data collection method for bracketing away layers of attitudes to arrive at the core attitude on the topic is a group dynamic. In this situation, the rapporteur struggles with the question of focus group composition and management of the conversation to ensure a free-exchange of ideas without causing harm to the participants. A third challenge of the traditional focus group method relates to managing participants who have an agenda, view themselves as experts on a given topic, or are more vocal. These participants can create challenges for the rapporteur in keeping the group focused on the topic, giving everyone an equal opportunity to be heard, and not allowing the opinions of one dominate the group discussion.

With the advent of computer technology, focus group researchers do have an "electronic" alternative to the traditional method of conducting a focus group session. Through the use of networked computers, rapporteurs now have a data collection tool that facilitates a group discussion while improving the objectivity of the data collection and analysis process, easing the discomfort of publicly discussing a sensitive topic, and managing challenging participants. The purpose of this paper is to explore the use of electronic focus group sessions with a research project conducted during the spring 1999.

Research Using Electronic Focus Groups

During the spring 1999, doctoral students enrolled in a qualitative research methods course conducted four electronic focus group sessions with faculty at a metropolitan university. The students registered for the course as a core requirement in the University of Arkansas at Little Rock higher education administration doctorate

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program. The purpose of the study was to explore faculty attitudes about the use of instructional technology in the college classroom. Using the Faculty/Staff Directory for the metropolitan university, the researchers purposively selected 25 faculty from each faculty rank – instructor, assistant professor, associate professor, and full professor – to participate in a focus group session. The researchers contacted each faculty member with a memo requesting their participation in one of four focus group sessions, a follow-up e-mail request, and a final phone confirmation of their participation.

Of the 100 faculty members contacted, 28 faculty participated in the study. Each focus group session was homogeneous based on faculty rank and lasted approximately one hour. In attendance at each session were the faculty participants, two students from the qualitative research course to observe the session, the rapporteur for the session, the instructor for the qualitative research course, and the director for the technology support center who served as a facilitator for the technology. The focus group sessions were neither audio nor video-recorded.

At the beginning of each session, the facilitator explained the technology to participants along with an explanation of how to respond to questions via the computer. The facilitator also demonstrated the anonymity of responses, in that, participants could type in their comments without any identifying label attached to those comments. After a brief practice session using the technology, the rapporteur engaged the focus group participants in a guided-question and answer process using a pre-determined focus group script. (See Appendix A for the focus group script.) Because the research project was an assignment for a qualitative research methods course, each student in the course took a turn serving as a scribe for a focus group session and as a rapporteur. Therefore, each of

the four focus group sessions had a different rapporteur and a different scribe observing the process.

The researchers received a printed transcript immediately following each session and a copy of the transcript on a computer diskette. They used a content analysis procedure to formally bracket the transcript into attitude codes and, then, convert those attitude codes into attitude themes and patterns. The resulting attitude patterns were used as the theoretical constructs in building a final theoretical framework on faculty attitudes about the use of instructional technology in the college classroom.

Technology Supporting the Electronic Focus Groups

The technology supporting the electronic meeting system began in the middle 1960s with computer-aided software engineering. Commercial use of electronic meeting systems began in the late 1980s. The University of Arizona became a major influence when it chartered Ventana Corporation where University Professor Jay Nunnamaker has led teams in developing techniques for electronic meetings (Weatherall & Nunnamaker, 1996).

Ventana Corporation's GroupSystems version 2.0 was the software used for the electronic sessions conducted in the University of Arkansas at Little Rock's Decision Support Center. This meeting room contains 14 networked computer workstations one of which is the facilitator station. The system uses one file server. The physical layout of the room is a "U" shape with 13 workstations in the "U". The facilitator workstation and projection screen are located at the top of the "U".

Each workstation is equipped with a pull out keyboard and mouse as well as a monitor which is recessed below desktop level and viewed through a glass cover. This

arrangement allows participants the convenience of viewing data on their individual monitor and the opportunity to participate in verbal discussions without the visual interference of desktop monitors. An integrated video projection system displays participant data entries on a public screen thereby enabling participants the option of viewing their own monitor or the larger screen.

The anonymity of participant responses is an integral component of Group Systems and increases the amount of key comments contributed. In this focus group study, in order to maintain anonymity yet allow the scribe to observe and record participant nonverbal clues, each workstation was assigned a random number. The printed summary of the session indicated the workstation number enabling the scribe to coordinate data with observation.

Two GroupSystems tools were used in the data collection. The first, Topic Commenter, allowed participants to generate ideas and assign them to topics. Each participant worked independently with their own electronic worksheet without seeing the input of others. Participants were then asked to look at the input of others and electronically offer comments by referencing a particular comment.

The second GroupSystems tool, Categorizer, provided a more flexible means for generating and synthesizing ideas. Participants were able to simultaneously see the ideas of others as well as their own with the option of immediately offering an opinion or comment. This resulted in electronic conversations conducted between two or more participants without disturbing the contributions of others.

Discussion: Benefits and Challenges of Electronic Focus Groups

The researchers for the faculty attitude study chose the electronic focus group session, primarily, in response to the three challenges mentioned earlier in this paper, the challenge of objectivity, sensitivity of the research topic, and management of participant discussion. As related to objectivity, in designing the research study the researchers wanted a data collection method that allowed for a group discussion of instructional technology while minimizing the influence of the rapporteur on the data collected. This was important for three reasons. First, as mentioned earlier, each focus group session had a different rapporteur. In a traditional focus group format, the moderating skills as well as the opinions of the rapporteur can influence the direction of the group discussion. Because of the use of multiple rapporteurs, the researchers were concerned about the effect of this diversity on the consistency of the data collected. Therefore, the electronic focus group format was selected in an attempt to minimize the interaction between the rapporteur and the participants with the hope of smoothing out the effect of multiple rapporteurs on the data collected.

Second, the researchers chose the electronic format because of the "artificial" distance placed between "hearing" the data as collected and analyzing the data. With the electronic format, the rapporteur simply read the focus group question to the participants and, then, quietly read the data at the facilitator workstation as the participants' typed their responses into the computer. There was no interaction between the rapporteur and the participants, only an on-going "electronic" discussion among the group. The rapporteur was "reading" the data instead of "hearing" the data with the implication of a more objective analysis of the transcript as the result. Third, as scholars of higher

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education administration, all of the researchers had come into contact with instructional technology at some point in their careers. Therefore, most of them had strong, pre-determined attitudes about the use of instructional technology in the college classroom. These researchers chose the electronic focus group format, once again, to minimize the influence of their opinions about instructional technology on the group discussion.

Related to the sensitivity of the topic, because of past experiences with instructional technology these researchers were concerned that instructional technology may be a sensitive topic for some faculty. They feared that faculty who did not like instructional technology would be hesitant to openly discuss their dislike or that faculty who did like instructional technology might dominate the discussion. The choice of the electronic format provided a cloak of anonymity that encouraged faculty to share their true opinions and attitudes about technology.

Finally, because of the student status of the researchers and the fact that all participants were faculty at the same university, these student researchers were concerned about their ability to manage a focused discussion among faculty participants. With the electronic format, the structure of the technology and the minimization of the interaction between the rapporteur and the participants provided a mechanism for managing the discussion without much intervention by the student rapporteur. Furthermore, because of a time limitation placed on both phases of the focus group session, those faculty with an agenda, with a perceived expertise in the area, or who were naturally talkative, did not have an opportunity to dominate the discussion.

The electronic focus group format was successful in improving objectivity, easing the sensitivity of the topic, and managing participants. However, there were additional benefits to the format. Those benefits included the following:

1. Because participants typed their thoughts directly into the data analysis medium, the accuracy of the data was enhanced with the capture of every voice and every comment.
2. By reducing the effect of multiple rapporteurs on the data collection process, several students had the opportunity to experience moderating.
3. The immediate printing of a transcript and the ability to copy the transcript to a disk for computer analysis eliminated the need to hire a transcriber saving the researchers time and money.
4. Even though one value of the electronic format was the anonymity of each participant, it was possible to assign each computer a number, have participants complete a demographic survey, place the computer number on each corresponding demographic survey, and, then, easily track the responses of the participants based on their demographics.
5. Because the electronic format did not allow for verbal group interaction, only group interaction through the written word, the format facilitated a concise discussion of the topic so the length of time for the focus group was reduced to only one hour.
6. Finally, because of the lack of verbal group interaction there was no need for video recording. Furthermore, because of the printing of a transcript from the computer there was no need for audio-recording session.

Just as with any data collection tool, the electronic focus group format did have several challenges. The primary challenge of the format was the reduced ability of the rapporteur to interact with the group. Even though this reduced interaction was a plus to the objectivity of the data collected, it was a minus in keeping the group focused on their topic. Periodically during the session, the rapporteur would read comments on the facilitator monitor that was taking the group discussion down the wrong path; or, it was a comment that the rapporteur was interested in further elaboration. Unfortunately, there wasn't an easy method for the rapporteur to call attention to the comment. Should the rapporteur verbally interrupt participant typing to address the comment? Or, should the rapporteur type in a request to focus the conversation, or a request for elaboration on a comment, running the risk that the participants would not read the request?

Other identified challenges of the electronic format included the following:

1. Because the group conversation was concise and to the point, data analysis of the transcript from the electronic format was much more difficult as compared with the analysis of a traditional focus group transcript. Literally, every single sentence on the transcript had multiple codes embedded in the sentence. The bracketing of the transcript was a tedious process.
2. Limited knowledge of the computer by some faculty members created difficult moments during the sessions. For example, in this study one of the senior faculty members didn't know how to operate the mouse. That faculty member struggled throughout the session with entering responses to the questions. In other sessions, some faculty were better, and faster, typists as compared with other faculty

participants. Therefore, it was possible that they dominated the discussion simply because of their expertise with and speed on a computer keyboard.

3. In several sessions, the faster typists and those who were more technologically literate finished responding to questions before the others. Because there was no verbal interaction to keep this individuals engaged in the session, many side conversations developed that created a distraction for those finishing their comments.
4. Finally, if the group was too small with only three to four participants, and they all know each other well enough to recognize references made in their comments, then the anonymity benefit was eliminated because they recognized the speaker based on the comments typed into the computer.

Conclusion

As computer technology increasingly infiltrates the work of the academy, researchers will begin to look for electronic solutions to past research dilemmas. In the arena of naturalistic inquiry via focus group methodology, those electronic solutions are attractive. However, as with any qualitative research method, the decision to use an electronic format must be made based on the research question(s) of the study, the sophistication of participants, the technology expertise of the rapporteur, and the level of exploration needed for the topic.

Based on the experiences of the researchers in this study, the electronic alternative to the traditional focus group method does provide several advantages. Beyond the advantages of improved objectivity, reduced concern about sensitive research topics, and improved management of challenging focus group participants, are those advantages related to the quality of the data collected and the efficiency of the process. The

electronic focus group does enhance the accuracy of data collected in that every voice and every comment is captured in "real time". There is no need to rely on the quality of a recorder and transcriber to capture every word of a session. The participants are typing their thoughts directly into the data analysis medium. Another advantage is the efficiency of time for both the participant and the researcher in providing a format for the collection of clear and concise data within a relatively short period of time.

The electronic focus group method, however, does have disadvantages with the primary disadvantage related to the reduce ability of the rapporteur to inject comments into the word stream to guide the electronic discussion or request elaboration on a given comment. Because the value of focus group methodology to naturalistic inquiry is providing a venue for in-depth exploration of a topic within a group dynamic, this one disadvantage of the electronic format is problematic. However, the experiences of this group of rapporteurs should not dissuade future researchers from choosing an electronic format. The problem of rapporteur involvement in the discussion may be more a consequence of the inexperience of the rapporteurs with the technology than a problem with the electronic format. Future rapporteurs interested in using an electronic focus group method would be well advised to spend time learning the technology and designing a mechanism for allowing electronic rapporteur interaction with participants.

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Appendix A

(Focus Group Script)

Introduction

Thank you for taking the time to join us in this electronic discussion. My name is. Please take this opportunity to share your thoughts and opinions freely. I will spend the next hour asking you questions designed to encourage an electronic discussion about faculty teaching experiences. The only ground rules to remember here are that there are no right or wrong answers to anything I ask; only your honest opinions. Because of the electronic nature of this discussion, your responses are completely anonymous. Furthermore, we will not use your name or department affiliation in the reporting of the data. The sign-in sheet will be used to write thank-you letters to you and will not be used to track your responses.

Discussion Questions

[Facilitator will give instructions to the group on how to use the technology. Wait for everyone's attention before asking the first question.]

Phase One:

1. Imagine that the Provost has just awarded you a grant for X dollars. You must use this grant money to develop the ideal classroom for your discipline. Think about the undergraduate courses that you teach at UALR. Describe the ideal classroom that you would develop for those courses using the grant award. Why do you believe this design to be the "ideal"? 10 minute brainstorming session.

[Do not allow the participants to view the responses of others during this brainstorming phase. Remind participants to submit their responses periodically so that we can monitor if additionally prompting is necessary to keep the discussion focused on the research agenda.]

2. Why do you believe this design to be the "ideal"? 5 minute brainstorming session.

[Facilitator will give instructions to the group on how to use the technology for the next question.]

3. For the next 15 minutes, please look at the responses of your peers in this session. Respond to their ideas of the "ideal" classroom. We encourage you to respond with both positive comments and critiques. You may also ask your peer questions concerning their original comment. PLEASE USE ALL UPPERCAPS TO RESPOND TO TYPE IN YOUR COMMENTS.

[Allow the participants to take a 2 minute break to stretch.]

Phase Two:

[Facilitator will instruct the group on how to use the technology for this phase. Remind the group to return to lower caps. Wait for everyone's attention before asking the next question.]

4. Close your eyes....picture in your mind...or imagine that another university has hired you to teach the same undergraduate courses that you currently teach at UALR. As you walk into your assigned classroom on your first day at the university, you discover that the classroom is outfitted with all of the most modern, innovative, cutting-edge educational technology. This technology includes networked PC workstations for each student, LCD projectors and panels, compressed video for distance education, Internet and e-mail access, and etc. The Provost has requested that you use this technology in teaching your class. How does this classroom make you feel? 10 minute brainstorming

[Facilitator will instruct the group on how to use the technology for this phase. Remind the group to use all caps.]

5. For the next 15 minutes, please look at the responses of your peers in this session. Respond to their attitudes toward the 21st century classroom.

[Facilitator will instruct the group on how to use the technology for this phase.]

6. Finally, what two tangible or intangible items related to the undergraduate courses that you teach would you want to bring to this 21st century classroom?

7. Please respond to what your peers have written in question number 6.

[Thank the group for their willingness to help with our research]